

## A CONSPECTUS OF THE GENUS BHESA (CELASTRACEAE)

by

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In his Numerical List Wallich inserted four specific epithets in the genus *Kurrimia*, viz 4334 *K. pulcherrima* Wall., 4335 *K. calophylla* Wall., 4336 *K. paniculata* Wall., and later 7200 *K. macrophylla* Wall. The latter one was provided with a question mark; it was a new combination for *Itea macrophylla* Wall. No generic or specific descriptions were provided, merely the indication that the name *Kurrimia* was named in honour of Kurrim Khan who had faithfully served the Calcutta Botanic Garden as its curator for four decades.

A few years later Walker-Arnott described a genus *Bhesa* Ham. ex Arn. (Edinb. New Phil. J. 16, 1834, 315) for which he provided a full generic description and brief but clear diagnoses of two species, viz *B. moja* Ham. and *B. paniculata* Arn., the former one based on Hamilton 788 from Hamilton's herbarium at Edinburgh, the latter on a Penang specimen from J. D. Hooker. He found himself "not able to discover any reference to it in Dr Wallich's List".

Shortly afterwards he discovered the congenerity of *Bhesa* Ham. with *Kurrimia* Wall. (Edinb. New Phil. J. 17, 1834, 260). In a new article he described two species under the latter name, one new species from Ceylon (*K. ceylanica* Arn.) and the other one from Penang (*K. paniculata* Arn.) (Nov. Act. Ac. Caes. Leop.-Car. 18, 1836, 328). He did not provide a generic description for *Kurrimia* Wall. Nomenclaturally the epithets are therefore not validly published as those two species were described under an undescribed genus (Paris Code Art. 42). He reduced *Bhesa paniculata* Arn. to the synonymy of *Kurrimia paniculata* Wall., thus giving up Hamilton's generic name *Bhesa*, in accordance with the last century's custom of English botanists to give full preference to all names of Wallich's Numerical List.

In 1837 Meisner (Pl. Vasc. Gen. 1, p. 67) provided the first generic description of *Kurrimia*, but unfortunately based it only on *K. macrophylla* Wall. which Wallich had tentatively referred to *Kurrimia*. This appears from the characters which he ascribes to *Kurrimia* Wall. ex Meisn. "petals valvate, style 1" and is sustained by his mention of *K. macrophylla* Wall. in the second volume of his work on p. 48.

From this it appears that *Kurrimia macrophylla* Wall. has become the type of *Kurrimia* Wall. ex Meisn.; and as *K. macrophylla* Wall. has been

referred to the saxifragaceous genus *Itea* L., so *Kurrimia* Wall. ex Meisn. is a taxonomical synonym of *Itea*.

Endlicher (Gen. Pl. 1840, p. 1089) has rightly maintained *Bhesa* Ham. ex Arn. for the celastraceous '*Kurrimia*' as Wallich obviously intended it. For obscure reasons this generic name has fallen into oblivion.

There is no possibility to save *Kurrimia* in the old sense and I have consequently adopted *Bhesa*; the latter one sometimes was erroneously referred to as '*Rhesa*'.

I have based my study of the genus *Bhesa* on the material represented in the Rijksherbarium, Leiden. In order to facilitate identification I have made two keys, one for flowering and one for fruiting material. Further I have enumerated the species with their synonymy and distribution and finally I have enumerated the collectors' numbers.

### BHESA

Ham. ex Arn. Edinb. New Phil. J. 16, 1834, 315; Endl. Gen. Pl. 1840, 1089; Walp. Rep. 1, 1842, 538, as *Rhesa*, sphalm.; Meisn. Pl. Vasc. Gen. 2, 1843, 348, as *Rhesa* sphalm. — *Kurrimia* Wall. List. 1831, no 4334—4336, 7200, *nomen*, pro maj. part.; Arn. Nov. Act. Ac. Caes. Leop.-Car. 18, 1836, 328, *nomen*; B. & H. Gen. Pl. 1, 1862, 365; Laws. in Hook. f. Fl. Br. Ind. 1, 1875, 621; Loes. in E. & P. Pfl. Fam. III, 5, 1892, 210; ed. 2. 20b, 1942, 158; non *Kurrimia* Wall. ex Meisn. Pl. Vasc. Gen. 1, 1837, 67; 2, 1837, 48, quae est *Itea* (Saxifr.). — *Nothocnestis* Miq. Sum. 1861, 530. — *Pyrospermum* Miq. op. cit. 402. — *Trochisandra* Bedd. Fl. Sylv. 1, 1871, t. 120.

Lecto-type species: *Bhesa paniculata* Arn.

Distr. Species 5, widely distributed in Ceylon, southern and eastern India, East Pakistan, Burma, Siam, and Malaysia (Sumatra, Malay Peninsula, Borneo, the Philippines, and New Guinea), as far east as Sudest. Isl. in the Louisiades.

Notes. In vegetative characters the spirally arranged leaves are characterized by the very fine cross-bar venation between the primary nerves. The petiole is thickened and kneelike at the upper end. The caducous stipules are convolute in bud and are provided with distinct colleters at the base inside.

### Key to the species

(based on flowering material)

1. Inflorescences paniculate, solitary.
2. Disk deeply 5-lobed. Filaments inserted in the sinuations of the disc. Anthers extrorse. Ovary always with a tuft of woolly hairs at the top. Styles entirely free.
3. Flowers distinctly pedicelled. Calyx lobes deltoid, c. 1 by 1 mm. Petals ovate to oblong, 2 by 1—1½ mm. Ovary ellipsoid, 1½—2 by 1 mm. Styles c. ½—⅓ the length of the ovary . . . . . 1. **B. paniculata**
3. Flowers sessile. Calyx lobes elliptic, c. 1½ by 1 mm. Petals obovate to oblong, 2¼—3 by 1¼—1½ mm. Ovary subglobose, 1 mm in diam. Styles as long as the ovary . . . . . 2. **B. ceylanica**
2. Disk entire. Filaments a continuation of the disk. Anthers introrse. Ovary glabrous. Styles slightly united at the base . . . . . 3. **B. indica**

1. Inflorescences simple, racemose, usually solitary rarely 2 or 3 in a leaf axil.
  4. Sepals broad-elliptic,  $1\frac{1}{2}$  mm long. Petals elliptic-oblong, 3 by 1 mm. Anthers latrorse. Disk usually puberulous. Filaments inserted just below the disk margin. Ovary with a tuft of woolly hairs at the top. Styles entirely free. Flowers subsessile to shortly pedicelled (c. 1 mm) . . . . . 4. **B. robusta**
  4. Sepals obovate, c. 3 mm long. Petals obovate, 4 by 2 mm. Anthers introrse. Disk usually glabrous. Filaments a continuation of the disk. Ovary glabrous. Styles shortly united at the base. Flowers distinctly pedicelled (3—7 mm) . . . . . 5. **B. archboldiana**

### Key to the species

(based on fruiting material)

1. Infructescences paniculate. Fruits obovoid or cordate, oblong, or broadly ellipsoid to suborbicular, blunt at the apex, lobed or not.
  2. Fruits distinctly pedicelled, 2-lobed.
    3. Fruits obovoid or cordate,  $1-1\frac{3}{4}$ (—2) cm long, acute to attenuate at the base . . . . . 1. **B. paniculata**
    3. Fruits oblong,  $2\frac{1}{2}$ —3 cm long, obtuse at the base . . . . . 2. **B. indica**
  2. Fruits sessile, simple, broadly ellipsoid to suborbicular . . . . . 3. **B. ceylanica**
1. Infructescences simple, racemose. Fruits ovoid-oblong or elliptic-oblong, attenuate to the apex, not lobed.
  4. Pedicels ( $2\frac{1}{2}$ —)1 mm or less. Leaves  $2-3\frac{1}{2}$ (—4) times as long as broad, with (11—)13—15(—19) pairs of nerves . . . . . 4. **B. robusta**
  4. Pedicels 3—7 mm. Leaves  $1\frac{1}{2}$ —2 times as long as broad, with 9—11 pairs of nerves . . . . . 5. **B. archboldiana**

1. **Bhesa paniculata** Arn. Edinb. New Phil. J. 16, 1834, 315; Walp. Rep. 1, 1842, 538, as *Rhesa*. sphalm. — *Kurrimia paniculata* Wall. List. 1831, no 4336, *nomen*; Arn. Nov. Act. Ac. Caes. Leop.-Car. 18, 1836, 328; Laws. in Hook. f. Fl. Br. Ind. 1, 1875, 622; King, J. As. Soc. Beng. 65, ii, 1896, 355; Merr. En. Philip. 2, 1923, 483; Craib. Fl. Siam. En. 1, 1926, 286; Ridl. Kew Bull. 1938, 235; Corner, Ways. Trees 1940, 190, fig. 49; Airy Shaw, Kew Bull. 1949, 162; Browne, For. Trees Sar. & Brun. 1955, 78. — *Pyrospermum calophyllum* Miq. Sum. 1861, 402. — *Schmidelia conferta* Blanco, Fl. Filip. ed. 2, 1845, 217, as *Schmidellia*, sphalm.; ed. 3, 2, 1878, 41. — *Kurrimia luzonica* Vidal, Rev. Pl. Vasc. Filip. 1886, 88. — *Kurrimia minor* Ridl. Kew Bull. 1938, 235.

Distr. Southern India, southern Siam, and Malaysia (Sumatra, Malay Peninsula, Borneo, and the Philippines).

Ecol. In primary and secondary forests, on dryland or in peaty or periodically inundated forests, from the lowland up to 450 m, a few specimens collected from 1070—1785 m (Mt Kinabalu). Fl. March—Dec.; Fr. throughout the year.

2. **Bhesa ceylanica** (Arn. ex Thwaites) Ding Hou, nov. comb. — *Kurrimia ceylanica* [Arn. in Nov. Act. Ac. Caes. Leop.-Car. 18, 1836, 328, nom. inval.] Arn. ex Thwaites, En. Pl. Zeyl. 1858, 72, incl. var. *montana*; Bedd. Fl. Sylv. 1, 1871, t. 147; Laws. in Hook. f. Fl. Br. Ind. 1, 1875, 622, incl. var. *montana*; Loes. in E. & P. Pfl. Fam. III, 5, 1892, 210, fig. 124; ed. 2, 20b, 1942, 158, fig. 43; Trim. Fl. Ceyl. 1, 1893, 274, incl. var. *montana*.

Distr. Ceylon.

Ecol. Warm moist parts of the island, from the lowland up to 1785 m.

3. *Bhesa indica* (Bedd.) Ding Hou, nov. comb. — *Trochisandra indica* Bedd. Fl. Sylv. 1871, t. 120. — *Kurrimia bipartita* Laws. in Hook. f. Fl. Br. Ind. 1, 1875, 622. — *Kurrimia indica* Gamble, Fl. Madras pt 2, 1918, 207. Distr. Southern India.

Ecol. In dense moist forests at 1075—2150 m.

4. *Bhesa robusta* (Roxb.) Ding Hou, nov. comb. — *Celastrus robustus* Roxb. Fl. Ind. ed. Carey & Wallich 2, 1824, 395; ed. Carey, 1, 1832, 626. — *Kurrimia pulcherrima* Wall. List. 1831, no 4334, nomen; Laws. in Hook. f. Fl. Br. Ind. 1, 1875, 622, nomen illegit. pro cit. prior.; King, J. As. Soc. Ben. 65, ii, 1896, 354; Ridl. Fl. Mal. Pen. 1, 1922, 452 Tardieu-Blot, Fl. Gén. I.-C. Suppl. 1, 1948, 807. — *Kurrimia calophylla* Wall. List. 1831, no 4335, nomen. — *Bhesa moja* Ham. ex Arn. Edinb. New Phil. J. 16, 1834, 315; Walp. Rep. 1, 1842, 538, as *Rhesa*, sphalm. — *Nothocnestis sumatrana* Miq. Sum. 1861, 531. — *Kurrimia robusta* Kurz, J. As. Soc. Beng. 39, ii, 1870, 73; For. Fl. Br. Burm. 1, 1877, 253; Pierre, Fl. For. Cochinch. 4, 1893, t. 296B, incl. var. *roxburghii* & var. *thorelii*; Pitard, Fl. Gén. I.-C. 1, 1912, 893, fig. 112, 3—8, incl. var. *roxburghii* & var. *thorelii*; Craib, Fl. Siam. En. 1, 1926, 286; Corner, Ways. Trees 1940, 190, fig. 49. — *Kurrimia maingayi* Laws. in Hook. f. Fl. Br. Ind. 1, 1875, 622.

Distr. NE. India, East Pakistan (Ghittagong Hills), Burma (Martaban, Pegu, Tenasserim), Andaman Isl., Southern Siam (Chantaburi, Sriracha), Indo-China (Tonkin, Laos, Cambodge), and Malaysia (Sumatra, Malay Peninsula, Borneo).

Ecol. In forests from the lowland up to 1075 m. In swampy forest sometimes producing buttresses. Fl. Feb.—Aug.; Fr. throughout the year.

5. *Bhesa archboldiana* (Merr. & Perry) Ding Hou, nov. comb. — *Kurrimia archboldiana* Merr. & Perry, J. Arn. Arb. 20, 1939, 335.

Distr. Sudest Isl. and Malaysia: New Guinea (Manokwari, Japen Isl., Western Division, Eastern Division, Koitaki).

Ecol. Rain-forest canopy tree, from the lowland up to 530 m.

### Excluded species

*Kurrimia ? macrophylla* (Wall.) Wall. List. 1832, no 7200, based on *Itea macrophylla* Wall. in Roxb. Fl. Ind. ed. Carey & Wallich 2, 1824, 419. = *Itea macrophylla* Wall. (*Saxifragaceae*).

*Kurrimia gracilis* Vidal, Rev. Pl. Vasc. Filip. 1886, 89 = *Ventilago dichotoma* (Blanco) Merr. (*Rhamnaceae*); cf. Merr. En. Philip. 2, 1923, 521.

### Enumeration of specimens examined

Achmad 371, 609, 758, 809, 817, 843, 907, 1063, 1550, 1814: 1; Amdjah 817, 843, 856: 1; Anderson 8558, 9041: 1. — Brass 7495, 7754, 25551, 28084, 28105: 5; Buwalda 7628: 4. — Cardona FB 23872: 1; Castro et al. PNH 5846: 1; Carr 12190: 5; Clemens 27396, 27396A, 40374: 1. — Dumas 1602: 1. — Elmer 9180, 13391, 15618: 1; Endert 114E 1P 836: 1; 123E 1P 789: 4; 123T 3P 348, 2454, 3529, 4713: 1. — Forbes 2793, 2816, 2832, 2944, 3045a, 3131: 1. — Grashoff 107, 222: 1; 276: 4. — Hallier 2068, 2615, 3415: 1; Haviland 644: 1; Herb. Helfer 1994: 4. — Iboet 430: 1. — Kerr 12076: 3; King's Coll. 442, 622: 4; 4111, 4759, 5922, 6501, 6827, 7934: 1; Kostermans 4159, 4176, 7058, 7121: 1; 7172: 4; 7202, 7237, 7247: 1; 7252: 4; 7321, 7661, 7735, 8072, 8092: 1; 9716: 4; Kostermans & Anta 1262: 1; Krukoff 4191, 4210,

4220: 1; Kunstler 4759: 1. — Lambach 1334: 1. — Maingay 394: 4; 395: 1; Meijer 4308: 1; Melegrito A 480: 1; Miranda FB 20578: 1. — Neth. Ind. For. Serv. E 789, T 531: 4; bb 2434, 3764, 4867, 4874, 19653, 19657: 1; bb 25129, 25219: 4; 26603, 29030: 1; bb 30527: 5; bb 31688, 32124: 4; bb 32230: 1. — Pickles SAR 3675: 1; Pierre 214: 4; Purseglove P 4650: 1. — Ramos & Edaña BS 43892: 1. — Schram BW 1727, 1967: 5; Sinclair SF 39072: 1; 39244: 4; Smythies, Wood, & Asthon SAN 17412: 1; Sulit PNH 21468, FB 29746: 1. — Teysmann HB 3702: 4; 3927, 8607, 10873, 10876: 1; Kwan Ting A 350: 1. — Womersley & Brass NGF 8633: 5; Wood A 4817: 1; Wood & Wyatt-Smith A 4580: 1.